

Research on Knowledge Creation and Innovation Method based on Deep Learning and Human-machine Collaboration Model

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Abstract: Knowledge creation and innovation have reached a stage of high-quality development since the widespread application of deep learning and human-machine collaboration models. Proposing better theoretical propositions to meet knowledge creation and innovation needs in the knowledge economy is necessary by adhering to knowledge-driven innovation ideas. Based on the dynamic evolution of deep learning and human-machine collaboration model development, a theoretical analysis framework for the sustainable development of the knowledge industry is constructed according to the inherent logic of knowledge creation and innovation, which can explain the knowledge creation and innovation development mechanism jointly generated by the knowledge generation mechanism and knowledge circulation mechanism involving deep learning and human-machine collaboration mode. And continue to explore the possibility of moving towards the goal of high-quality knowledge development from the perspective of challenges, changes, and practical deductions in the development of the knowledge industry. Knowledge creation and innovative development aim to provide content that meets expected standards for the knowledge economy and is committed to continuously improving knowledge quality and enhancing knowledge satisfaction. Therefore, it is necessary to strengthen knowledge control based on the deep learning quality internal cycle, build an interaction and feedback mechanism between human-machine collaboration mode and knowledge quality perception, and establish a knowledge and economic evaluation system to achieve knowledge creation and innovate high-quality development, promote knowledge economy, and truly meet social needs.

Keywords: Deep Learning; Human-machine Collaboration Model; Knowledge Creation and Innovation; High-quality Development.

1. Introduction

Knowledge creation and innovation are one of the main responsibilities of the knowledge economy and are also the collective name of the knowledge industry, which can be divided into basic knowledge creation and innovation and non-basic knowledge creation and innovation, composed of deep learning and human-machine collaboration models, respectively. In order to improve knowledge quality and satisfaction, the knowledge industry also entrusts knowledge evaluation systems to evaluate knowledge content. Based on the deep learning and human-machine collaboration models, the knowledge generation mechanism is the key to knowledge creation and innovation, and the knowledge circulation mechanism has become an evaluation indicator. In contrast to traditional knowledge creation and innovation, deep learning and human-machine collaboration models emphasize diversity, flexibility, and intelligence. Therefore, the issue of sustainable development of the knowledge industry is proposed, and high-quality development provides a new goal for the knowledge industry.

High-quality development originates from innovative ideas driven by Knowledge. Its connotation contains value reversion and is also a tool for the knowledge economy. From the perspective of knowledge structure, high-quality development pursues balance and realizes knowledge modernization through the combination of deep learning and a human-machine collaboration model. However, this is only in theory. Today, the knowledge industry has practiced a unique path of two-way optimization. Promoting high-quality

development not only rewrites knowledge content and reflects the quality of Knowledge but also changes the knowledge system to meet social needs. Consequently, a global perspective and pattern are necessary when discussing high-quality development. Therefore, a common sharing proposition is proposed in deep learning and human-machine collaboration mode. In short, high-quality development is the necessary condition and guarantee to achieve sustainable development of the knowledge industry. From a real perspective, the knowledge industry has made progress, but there are also shortcomings. However, deep learning has not yet fully succeeded in eliminating knowledge challenges, and it continues to work hard in this area. Therefore, high-quality development requires strengthened measures, which are requirements for deep learning and human-machine collaboration models and expectations for the knowledge economy.

Based on the above background analysis, this paper proposes a knowledge creation and innovation method based on deep learning and human-machine collaboration model to promote high-quality development. At the same time, the problem of sustainable development of the knowledge industry is solved through theoretical analysis and practical deduction. The main content is to analyze the knowledge challenges of deep learning and the human-machine collaboration model. Then, corresponding response strategies are proposed to effectively deal with the emergence of derivative risks under the rule of algorithms, which have theoretical significance and practical value.

2. The "Knowledge Creation and Innovation" of Deep Learning and Human-machine Collaboration Model Realize the New Change in the Knowledge Economy

2.1. The Creation and Innovation of Knowledge Content

Knowledge content creation and innovation have developed simultaneously with the knowledge economy, which is "soaked" in innovation concepts, representing the value orientation of the knowledge industry and reflecting the knowledge content generation strategy since deep learning and human-machine collaboration models were first developed. However, it is still difficult to achieve consensus when constructing the definition and essence of knowledge content using certain quality criteria. The creation and innovation of knowledge content involve multiple levels and dimensions, such as the form, structure, function, attributes, value, etc., of Knowledge. Different perspectives and roles may have different understandings and evaluations of it [1]. This paper aims to explore the connotation, characteristics, mechanisms, and impacts of knowledge content creation and innovation from the perspective of deep learning and human-machine collaboration models to provide some theoretical reference and practical guidance for the sustainable development of the knowledge industry.

2.2. Knowledge, Innovation and Economy

Knowledge quality is an important criterion for knowledge content and an objective expression of the knowledge value. Different definitions of knowledge quality are discussed from the perspectives of knowledge form, structure, function, and attributes. Some scholars believe that knowledge quality is the degree of knowledge validity or satisfaction [2]. It is precisely because the quality of Knowledge is more measurable to a certain extent and belongs to applied science with the purpose of high-quality development. A history of research on knowledge quality dates back to ancient Greece, and its main activities include knowledge classification, logical reasoning, dialectics, etc. However, the concepts and goals of high-quality development are closely related to the rise of the knowledge economy. Through deep learning and human-machine collaboration models, knowledge creation and innovation have become important responsibilities of the knowledge economy. The main contribution of the knowledge quality theory in the 20th century was to propose concepts such as knowledge generation mechanism and knowledge circulation mechanism. Thus, high-quality development was initially defined primarily regarding knowledge quality measures based on deep learning and standardized attributes of human-machine collaboration models.

3. Knowledge Challenges Brought by Deep Learning and Human-machine Collaboration Model

3.1. Chaos of Knowledge: The Excessive Generation of Deep Learning Causes the Imbalance of Knowledge System

Compared with traditional knowledge creation and innovation, deep learning emphasizes the relationship

between data and algorithms and is characterized by automation, intelligence, and diversification. Most scholars maintain that deep learning can rationally evaluate knowledge content, even if some doubt the direct correlation between deep learning and knowledge creation and innovation [3]. Goodfellow et al. proposed the classic deep learning model of a generative adversarial network, which contains two elements: a generator and a discriminator. Since then, this model has become a typical tool for knowledge generation mechanisms, thus developing the concept of knowledge generation. These scholars believe knowledge generation is creative and "creates something from scratch." Only when the generator and discriminator reach Nash equilibrium will the knowledge content be high quality. Thus, knowledge generation is the result of deep learning. Some scholars have also summarized knowledge generation as a two-way model: a data-based and goal-based knowledge generation model. The former focuses on data-driven, while the latter focuses on goal-oriented, that is, knowledge circulation. From the perspective of high-quality development, although deep learning has experienced some practical failures, it can improve knowledge content's diversity, flexibility, and intelligence. As a result, knowledge generation has gradually become a consensus in the research and practice of sustainable development of the knowledge industry [4].

The diagram of the deep learning and human-machine collaboration model is shown in Figure 1.

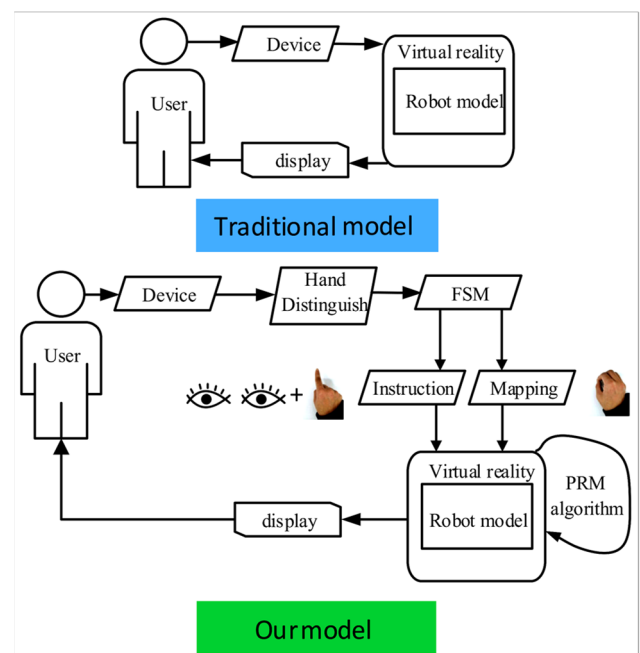


Figure 1. Diagram of deep learning and human-machine collaboration model

3.2. Knowledge Prison: The Knowledge Operation under the Human-machine Collaboration Model

The conceptual essence of knowledge prison is to focus on the problem of knowledge control. Knowledge control is the application of knowledge management thinking in the knowledge industry. In order to overcome the shortcomings of traditional knowledge creation and innovation, the human-machine collaboration model framework has entered the research field as a new alternative model. According to the framework, the human-machine collaboration model should ensure the effective realization of knowledge content,

establish professional standards for knowledge creation and innovation output, "capture" knowledge quality through technologies such as knowledge assessment systems, and measure knowledge satisfaction using knowledge cycle methods. The human-machine collaboration model framework reconstructs the knowledge generation mechanism, emphasizing enhancing human and machine interaction and building reliability, sustainability, scalability, and adaptability for high-quality development.

3.3. The Birth of Derivative Risks under Algorithmic Domination

Algorithmic domination is the main risk of deep learning, mainly reflected in algorithms' impact on knowledge content. That is, the actual situation of knowledge quality and satisfaction is directly reflected through the knowledge generation mechanism. Some factors that constitute the development of algorithmic domination are gradually taking shape, such as algorithm transparency, algorithm responsibility, algorithm fairness, etc., and various evaluation systems are gradually receiving attention. Nevertheless, from the perspective of high-quality development, some deep learning practices are still at the data-driven stage and do not align with the logical framework and generation mechanism of the human-machine collaboration model, leading to knowledge barriers, knowledge distortions, and knowledge biases etc.

4. The Coping Strategies of the Knowledge Industry Sustainable Development Process under the Technology Challenge

4.1. Two-way Optimization: Deep Learning Gets Rid of Knowledge Challenges

From the perspective of high-quality development, knowledge generation is integral to knowledge creation and innovation, and it also represents the core of deep learning. Therefore, knowledge generation regards data-driven as the main generation logic. Knowledge control is the main guarantee of knowledge quality and the executive subject of the human-machine collaboration model [5]. At this stage, knowledge control strengthens deep learning control from the perspective of knowledge content. There are three main forms: One is to optimize the generator and discriminator. It is possible to achieve Nash equilibrium between knowledge generation and knowledge circulation in explicit generators and discriminators. The second is to formulate knowledge quality standards. Establish data quality standards, algorithm quality standards, and evaluation standards to achieve standardized control of deep learning. Third, the internal process reengineering of deep learning. In recent years, Google and others have used artificial intelligence to improve deep learning efficiency and knowledge satisfaction. However, in contrast to the human-machine collaboration model, current deep learning requires further improvement in terms of sustainability [6].

4.2. Shared Responsibility: Human-machine Collaboration Model for System Optimization and Governance

The fundamental difference between the human-machine collaboration model and deep learning lies in its target

attributes. The quality standards and evaluation criteria of deep learning are data-driven, and knowledge generation mainly reflects diversity and flexibility. In the logical framework of the human-machine collaboration model, accurate feedback, interactive collaboration, goal orientation, and value reversion are the core values and highest standards of high-quality development [7]. Due to the diversity of current knowledge content types and the differences in social needs, knowledge circulation has become increasingly complex. Although the human-machine collaboration model can improve knowledge satisfaction, the knowledge evaluation system remains imperfect, and there is no effective mechanism for knowledge control. Therefore, this produces the "shortboard" of knowledge, affecting knowledge quality [8].

4.3. Value Reversion: Correct Algorithm, Restore Knowledge

From the perspective of value reversion, deep learning cannot accurately provide the knowledge content required by social needs. The main form of social demand for knowledge content is satisfaction evaluation, but deep learning lacks relevant information and feedback mechanisms for social demand. The core of this problem may be algorithmic domination. Algorithms are described as "black boxes" in knowledge generation mechanisms, and their impact on knowledge content directly influences the quality of Knowledge. While algorithmic domination is primarily concerned with information, such as data quality and algorithm quality, social needs are relatively rare. Usually, social needs are difficult to obtain or measure. Information asymmetry and imperfect evaluation systems directly lead to obstacles in knowledge prisons.

Deep learning cannot avoid the "black box" of the algorithm when it comes to generating Knowledge. Algorithms are standard and effective tools in the knowledge generation mechanism and play an important role in knowledge content. As a result, algorithmic domination is not only a technical concept but also a social one. Therefore, "data-driven" deep learning has become the decisive mechanism for knowledge quality. Deep learning is generally interpreted as a knowledge path that is gradually developed based on data, although it may also contain innovative approaches. From data quality to algorithm quality, deep learning is closely centered on knowledge quality from beginning to end. Although deep learning should be committed to improving knowledge satisfaction to adapt to social needs, when algorithmic domination is amplified, it also brings about a dilemma: the phenomenon of knowledge prison. In general, there is still room for improvement in knowledge circulation and other aspects of deep learning, and its value reversion needs to be further improved, which is also an important task of high-quality development.

5. Conclusion

Knowledge creation and innovation have entered a stage of high-quality development, posing new challenges and requirements to the knowledge industry. High-quality development is a symbol of the "quality" of knowledge content and an important means of the knowledge economy, which is also an urgent need to realize social needs and maintain value reversion, thus embodying the inherent requirements of knowledge-driven innovative ideas. Under

the guidance of this idea, based on deep learning and human-machine collaboration models, a theoretical analysis framework and practical mechanism for the sustainable development of the knowledge industry will be constructed. In recent years, modern information technologies such as artificial intelligence have promoted knowledge generation, empowered knowledge circulation through knowledge control, and improved the accuracy and scientificity of knowledge quality and satisfaction. Its value is in line with the inherent logic of high-quality development. Therefore, deep learning and human-machine collaboration models also provide new knowledge creation and innovation paths. Generally, the sustainable improvement and development of the knowledge industry will help better meet social needs and promote the knowledge economy.

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